CORA Cork Open Research Archive
Cartlann Taighde Oscailte Chorcaí

Title	Digital privacy GDPR: a proposed digital transformation framework
Authors	Russell, Kenneth D.;O'Raghallaigh, Paidi;O'Reilly, Philip;Hayes, Jeremy
Publication date	2018-08-16
Original Citation	Russell, K. D., O'Raghallaigh, P., O'Reilly, P. and Hayes, J. (2018) 'Digital privacy GDPR: a proposed digital transformation framework', Proceedings of the 24th Americas Conference on Information Systems (AMCIS 2018), New Orleans, LA, August 16-18. Available at: https://aisel.aisnet.org/amcis2018/DataScience/Presentations/36/ (Accessed: 14 November 2018)
Type of publication	Conference item
Link to publisher's version	https://aisel.aisnet.org/amcis2018/DataScience/Presentations/36/
Rights	© 2018, the Authors. Published by the Association for Information Systems (AIS). All rights reserved.
Download date	2023-05-05 10:35:36
Item downloaded from	http://hdl.handle.net/10468/7111

UCC
University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

Digital Privacy GDPR: A Proposed Digital Transformation Framework

Completed Research

Kenneth D. Russell
Cork University Business School
115148530@umail.ucc.ie

Paidi O'Raghallaigh
Cork University Business School
P.OReilly@ucc.ie

Philip O'Reilly
Cork University Business School
Philip.OReilly@ucc.ie

Jeremy Hayes
Cork University Business School
J.Hayes@ucc.ie

Abstract

The art and science of successful digital transformation lies in the organization's ability to implement change at pace, across people, processes, and platforms. While many enterprises begin with brave ambitions, just a few manage to plan, implement and deliver those initial aspirations. The GDPR privacy challenge is symptomatic, being digitally substantial, and oftentimes underestimated. Time-critical transformation demands maintaining change-momentum through employee involvement earlier in the initiative. Our objective in this paper is to evolve a framework to guide engagement, and to assist in the identification and measurement of propensity for change in digital privacy. This paper describes a design science approach to developing the trusted framework to identify and measure resource gaps, both organizational and individual. The resulting Gap-Map framework evolved over several multinational transformation programmes, evaluated through workshops, interviews, surveys, and advanced use-cases. The artefact was found to enable informed decision-making resulting in comprehensive implementation of GDPR (General Data Protection Regulation), through building a shared understanding of those gaps.

Keywords

GDPR, digital transformation, privacy, shared understanding, internal intelligence, Gap-Map framework.

Introduction

Facts are a premium. This was emphasized during the recent European Union enactment of the GDPR Directive (EU:2016/679) to redress citizen's right to privacy. Despite a two-year preparatory period, most businesses struggled with GDPR adoption, and focused more on pixels and processes, than on *people*. Indeed, some CXOs delay large digital transformation planning due to the "*Intelligence Accessibility Principle*", which we define as the prohibitive cost of people understanding resource requirements for substantial change[1]. As humans, we all maintain disparate and diverse personal 'mental-models' of resource availability in change such as people, process, or platforms. By creating vivid shared mental-maps, we enable understanding of gaps in change requirements for decision-makers to redress. Without gap-understanding, transformation is often forced on organizations by change-sponsors and agents. Shared understanding of organizational and individual gaps could then reduce the cost of privacy implementation, enhance decision making, and by extension substantially expedite digital transformation with reduced OPEX (operating expenditure). The proposed approach evolved when the lead author, as Programme Director of a major transformation, realized that the Legal Group in the organization were not aware that engineers were creating transcontinental networks, constituting data-privacy breach. Conversely, engineers were unaware of legal regulatory requirements. Our artefact proposes to address gaps in shared understanding of Organization Readiness (Or) and Individual Readiness (Ir) to change. (Or) is defined as

[1] Institute for Competitive Intelligence / Bradford Ashton & Stacey,1995.

organizational willingness to engage proactively in developing and maintaining stakeholder relationships. (Ir) is defined as articulation of personal basic and growth needs to participate in (Or). The research question of this study then is:

How might we design a Gap-Map framework to assist enterprises in expediting GDPR transformation, by measuring propensity for change in organizational structures, & facilitate shared understanding?

Using an Action Design Science Research (ADSR, or ADR) approach, we present a proposed framework and consider its value for generating shared understanding when applied in a European digital-privacy transformation case. The major contribution of this study is an evaluated framework that facilitates diverse entities to articulate their respective environments, and by overcoming barriers to shared understanding, increase organization propensity to change. The framework contributes to privacy transformation effectiveness, reducing OPEX costs, with ROI returns, and improving business, human and CX outcomes.

The remainder of this paper is structured as follows: the next section overviews the research approach based on Design Science literature. The following section presents the resulting framework, or 'Gap-Map' artefact. The penultimate section presents an evaluation of the proposed methodologies, and finally we assess the contribution of the artefact against a successful transformation engagement.

Relevant Literature

Digital privacy complexity is obvious when one considers the challenges and opportunities afforded by fourth industrial revolution potential. I.S. transformation for GDPR requires that we more than ever balance people's perspectives and expectations, pending opportunities such as Artificial Intelligence or Quantum Computing. Gartner (2011) propound three key internal intelligence dimensions indicative of organization readiness for transformation, which are people, process, and platform. Several studies also advance culture, or organization actions in practice (Strong and Volkoff, 2010; Schein, 2016). Indeed Schein (p.397) suggests a successful culture in a multinational organization must invoke the action of "*sharing common language*". Organization propensity for change could allocate 25% readiness weight across the "4P" dimensions:

1. ***People***: Individual & Organization; potential knowledge silos, inflexible ways-of-working.
2. ***Process:*** inter-operability issues due to organization or technology change.
3. ***Platform:*** technology complexity.
4. ***Practice:*** organization culture, basic and growth needs**,** propensity to adapt.

During digital transformation planning, each respective expert's vernacular may be wrapped in the semantic meaning or context of those using the terminology (Hockett, 1958, and Chomsky, 1964). Chomsky later suggests (1993) that humans invoke the "minimalist program" to communicate surface-structure (or "universal grammar"), through a simplification of a mental-model. However, this misses the "deep-structure" information available, because the world demands we reduce the plethora of information our brain-functions process, inherently reducing it to a subset (Watzlawick et al, 1978. Bandler & Grinder (1983). Chomsky suggests that to attain agreement on complex transformation steps, we "reframe" or place available information "*in another frame which fits the "facts" of the same concrete situation equally well or even better*" in order to change its meaning to our fit.
Owing the world demands we reduce the plethora of information our brain-functions process, inherently reducing it to a subset (Watzlawick et al, 1978). Bandler & Grinder (1983) and Chomsky suggest that to attain agreement on complex transformation steps, we "reframe" or place available information "*in another frame which fits the "facts" of the same concrete situation equally well or even better*" in order to change its meaning to our fit. Koestler (1964) labels this 'bisociation', as it facilitates decision-making with more than transformation programme information, but also organizational connected meanings, and decision context. But we miss a key ingredient – due to political, or survival instinct, contributors routinely reserve information due to many factors, including 'fear' (negative evaluation by peers is at the heart of impression management - Schlenker and Leary, 1982; Watson and Friend, 1969). Van Beveren (2002) advances frames of reference in the domain of knowledge sharing (KS) to help leverage human-intellectual capital within firms to help overcome such fear. Ipe (2003) and Pérez-Bustmante (1999) propose KS should facilitate the dissemination and sharing of important information that promotes a culture of creativity and

innovation within and between internal staff. We may assert that current KS methodologies may not be commensurate with contemporary digital privacy transformation complexity and as such, opportunity exists for new frameworks. Many current gap frameworks (cf. Table 1 - Ostrowski et al, 2014; Parasuraman et al, 1988; Frost & Kumar,2000; Moteleb & Woodman, 2007) are industry specific, or are detached from I.S. organizational needs; others are possibly too complex and ambiguous, or not specific enough, so limiting immediate apparent utility.

The Oxford English Dictionary defines framework as "*a set of concepts and categories in a subject area or domain that shows their properties and the relations between them*". Gruber's (1993) definition is simpler, "*an explicit specification of a conceptualization*", yet Genesereth and Nilsson (1987) argue the word "conceptualization" is ambiguous. Our definition is based on that proposed by Guarino and Giaretta (1995), being "*a logical theory which gives an explicit, partial account of a conceptualization*". In our case, the framework aids in creation of a commonly understood 'mental-model", constituted from the component parts of a digital privacy transformation, including the relationship and hierarchy between constituent organization parts.

Our literature review concentrated on methodologies of utility that assist organizations in mapping, measuring, and aiding complex digital transformation, to help identify essential pillars in investigation of our research question and building the proposed framework (Table 1). KS (Ostrowski et al, 2014; Andonie et al, 2007) is of particular importance, as Simard (2017) demonstrates that tacit knowledge helps determine *what* we must transform in order to achieve our target state. It is through KS that organizations are enabled to 'mental-model' the gap between the current state, and the sought target state, through the lens of the 4Ps. While each approach accommodates various constituent parts, there exists limited current research recognizing the interdependence of all pillars. There is an opportunity to now advance a new framework embracing this extended ontology.

A Priori Research	Chandler et al/ Gartner (2011)	Ostrowski et al (2014)	Gibson and Cohen, 2003 Davies et al '04	Gilad (2011)	New Change Propensity Framework
Artefact Name / Pillar Theme	Business Analytics Framework	Framework Engineering Ref. Model	Virtual Teams Research Framework	'Blind-Spot' Internal Intelligence	Framework for Digital Transformation
'4Ps' People Process Platform Practice	√	X	X	√	√
Knowledge Sharing(KS)	X	√	X	√	√
Virtual Teams (VT) / Communities of Practice (COP)	X	X	√	√	√
Shared Understanding	X	X	X	X	√

Table 1. Pillars across Gap Frameworks

A New Framework: Digital-Privacy Transformation "*Gap-Map*"

The DSR approach is to generate knowledge of a problem domain through the build and evaluation of a designed artefact (Hevner, 2007). There is a wide-spectrum of researchers who now advance utilization of DSR in leading companies (Hevner & Chatterjee, 2010; Gregor & Jones, 2007; March & Smith, 1995). This treatise utilises DSR in designing a framework that assists in the ontological framing of complex digital-privacy transformation through identification and measurement of gaps in knowledge. While the build-evaluate loop is an iterative approach, artefact generation consciously looks for improved utility. Nunamaker, Chen et al. (1990) classify DSR as applied research that utilises knowledge to solve practical problems. Van Aken (2005) suggests that DSR aims to generate knowledge on advantages and disadvantages of alternate solutions. The initial concept behind the proposed framework emerged over a period of eight years, through the lead author's engagement in global ICT transformations for service-providers (SP). The artefact evolved through several iterations, and culminates with the current Gap-Map

framework which was used in dealing with resource gaps during the simultaneous implementation of both GDPR and the South-African POPI[2] Acts in one SP [3]. The first was a '*knowledge trampoline*', utilized in a Latin-American transformation. It was based on the simple premise that a single page specification of people, process, and platform requirements built on lessons learned from a serial Revenue Assurance deployment across 23 countries. Beginning with an initial iteration in a "proof-of-concept" country, the result was that by iteration four, deployment costs had substantially reduced, due to knowledge sharing bringing together best-practice and best available resources. While it initially involved high initial cost and pain for expert global transformation practitioners, through 'lessons-learned" feedback, implementation devolves by the fourth iteration to less expert, and lower cost local implementation teams, with remote support. The '*use case approach*' was an improvement on the 'knowledge-trampoline', in that there is less up-front cost (as we used less premium service-resources), and concentrated on facilitated self-management. External experts liaised with the company through workshops, questionnaires and 1-to-1 interviews, culminating in use-case artefacts optimized for knowledge-sharing. "*Use-case-advanced*" is similar, but due to the complexity of change, and due to time, resource, budget, or other restrictions, we attempted to control the scope-of-work through use-case prioritization. Following initial workshops, surveys and interviews, we followed only 'premium Use-Cases' (selected by the customer, to delimit scope and cost), and advanced only those select cases through for transformation.

The '*Gap-Map*' framework is an adaptive, progressive artefact. Due to the scale, scope and intricacy of digital-privacy transformation, we need to quickly and effectively establish the facts of the transformation needed at that moment in time, from the perspective of all stakeholders. The Gap-Map allows each party to raise their challenges or risks and propose potential business solutions in each ordered step. Each step acts as input for subsequent evaluation against next steps. For example, potential technical solutions must undertake risk-reward analysis, and value outcomes for each scenario. Each step evolved through the ADR approach articulated in table 2 (Grohowski et al. 1990). Sein et al (2011) define ADR as reflecting that IT artefacts are "*ensembles shaped by the organizational context during development and use*". Gap-Map is conceptualized as a visual-cue to identify and measure extant gaps in the organization's shared understanding. The framework us usually utilized as an iterative process, whereby we usually need several evolutions to advance and continuously improve a shared "mental-model" of gap requirements of the Communities of Practice (COP).

Year	Organiz-ation	Nature of Digital Trans.	Nature of Artefact evolution (& *attributes*)	Impact (measurable)	#Interviews (Anonymous) & *Profile*	Work shops	Meet-ings	Surveys (Anon) Y/N
2010	Largest SP in Latin-America (23 countries)	Revenue Management	'Knowledge Trampoline': One-page specification. *(Logarithmic-curve of Knowledge-Sharing through lessons-learned from Consultants & Subject Matter Experts)*	Costly first iteration, cheaper nth iteration. Revenue Savings of €1bn+ OPEX savings of €2m+	Multiple *(VP, Finance, HR, Sales/ Marketing, Engineering, I.T., Ops, Customer Service (at all levels)*	Multiple Across Year	Multiple	N
2012	Largest SP in North America	4G/LTE (4th Generation mobile/ Long Term Evolution)	Use-Case Approach: Simplest representation, 1-page diagram of actors & interactions with system, and different scenarios. (W*orkshops, questionnaires, 1-to-1 interview based*)	Get to Market 4G/LTE Reduced churn/increased market-share	Multiple *(VP, Engineering, I.T., Ops, Customer Service (at all levels)*	Multi-ple Across Year	Multi-ple	N
2014	Largest SP in Canada	Know-ledge Manage-ment	Use-Case-Advanced: Comprehensive 2-4 page representation, 1-page diagram of actors & interactions with system, and selected, prioritized scenarios.	Improved CXM respective of digital privacy.	24 *(CXO, Engineering, I.T., Ops, Customer Service at all levels)*	2	6	N
2015-2016	Largest European	Customer Experienc	Use-Case-Advanced	Enhanced CXM	16	22	20	N

[2] PoPI Protection of Personal Information Act No.4(2013) – South Africa's digital privacy act (public and private bodies)

	and African SP (London based HQ)	e Manage-ment (CXM) GDPR /POPI Digital Privacy	Organization Gap-Map: 8 Action steps resulting in 2-4 page partial representation diagram & report of actors & interactions to achieve change goal. (*CXO Business Objectives meeting; Line-Mgr. Gap-Map workshop*).	Reduced churn/increased market-share Mitigation of POPI Act.	*(CXO, Finance, HR, Sales /Marketing, Engineering, I.T., Ops, Customer Service at all levels)*			
2017-2018	Market Leading Original Equipment Manufacturer (OEM)	Enterprise Enable-ment of GDPR	Organization and Individual Gap-Maps *(spider diagram of current versus target gap needs for Individual key needs and growth needs).* Gap-Map (*Realtime gap dashboard SaaS)*	Gap-Map: Reduced churn/Increased market-share, CX trust, ARPU (rev. per user).	Ongoing Mitigation of GDPR Act. *IGM & Gap-synthesizer (SaaS) impact to be advised*	Ongo-ing	Ongo-ing	Y (180 partic-ipants)

Table 2. Gap-Map genesis: the build, evaluate, impact, and empirical chain

While Gap-Map must initially act as a 'visual-cue' aiding completion of steps, articulation of each 'mental-model" fragments eventually builds the organization's framework or 'real-logic'. This sets a context for propensity for change through the gaps identified at each step. In step 1, the transformation Programme Director sits with the Change-Sponsor and they mutually evaluate GDPR Business Objectives. An example step & gap is Step 2, a one-day workshop with all relevant Heads-of-Department or Line-Managers responsible as Change-Agents. Some may demur, but as Gap-Map illustrates GDPR Business-Objectives on-screen, this acts as an incentive to engage. The stakeholders post their departmental challenges, with respect to people, process, platform, or culture issues into gap#2 of the Gap-Map with sticky notes (or e-posts if Virtual-Teams attend). Challenge examples are overcoming operational KPIs, organizational interfaces, or competence gaps. Each Line Manager (LM) or business stakeholder reviews their business risks in step#3, and preferred associated business solutions at step#4. This step may be iterated with their staff or other technical stakeholders to reverse-engineer risks e.g. to budget or resource constraints. Technical Line-Managers lead step#5, 'ways to solve'. By now there is a noticeable collaboration dynamic engendered between business and technical collaborators, and wider experts (legal, marketing etc). Teams then address potential rewards and value gaps in step#6, which act as motivators to the wider staff in the upcoming transformation program.

By measuring "gap-requirements" in GDPR, we may assist in conversion of specialist tacit terminology to explicit, and shared, understanding through the 'Gap-Map' framework. In essence, our research objective is to measure the organization propensity for change (PC). PC is represented here diagrammatically, and as a formula (figure 1):

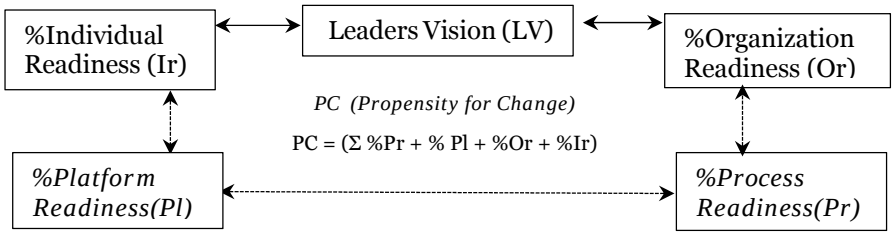

Figure 1. Propensity for Change (PC) in Digital Transformation

In our guiding equation, PC ("Organization propensity for change") is set at 100% (utilising the U.S. Navy readiness model). For calculation simplicity, we allocate each 4P pillar a maximum weight of 25% of total readiness. It is assumed that Operational Consultants calculate process readiness, and Solutions Architects calculate platform readiness in the usual way, reporting respective percentage readiness. Our Gap-Map GDPR framework focusses on the %gaps in readiness for the two remaining pillars: Organization Readiness (Or, gap-map steps 1-6) and Individual Readiness (Ir, step 7). Gap-Map steps 1-6 (Or) is expressed as percentage by the collaborative group at step2 workshop. However, in a private capacity, personal factors may lead to substantial instances of limiting (Ir). This was observed at step#7 ,

due to factors such as fear of change, or job-insecurity associated with the proposed change. Step#7 found substantial gaps in what people privately maintain as individual values, and those observed in their current organizations. Step#7 of the Gap-Map then addresses a major opportunity to empirically measure the delta in individual's values, and what values they seek from the organization in spider-diagram format. An actual step#7 survey of 294 employees prior to a major transformation measured the top 8 sought values (picked rapidly from a list of 100 value-words). The values most sought in the 'new' organization were agility, employee recognition, long-term perspective, employee engagement, information sharing, embracing diversity, experience, and continuous improvement (figure 2):

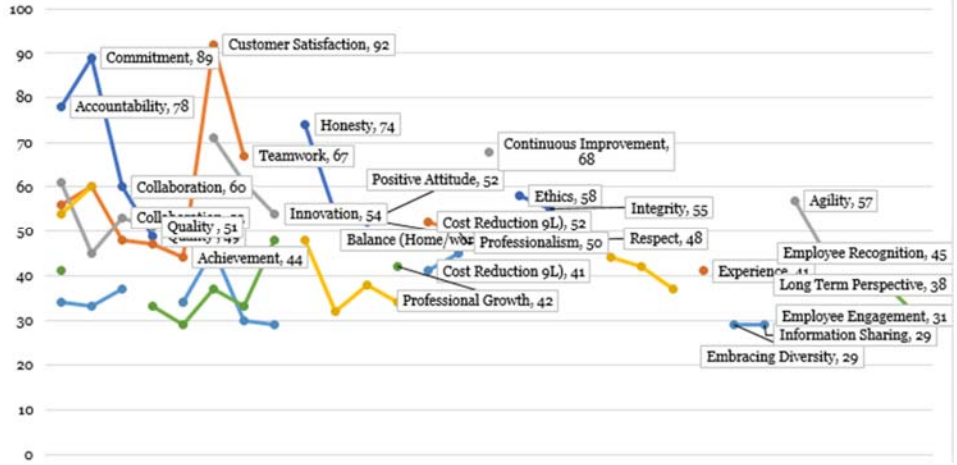

Figure 2. Sought Organization (SO) values survey (participant base 294)

Ultimately, the sum of both percentages of readiness (Or , Ir) represent the propensity for the specific change. The Gap-Map objective is to balance the PC equation; the perfect scenario has a score of 100, being percentage sum of readiness following consideration of all gaps (excluding process and platform in this treatise):

$$\%Or = \Sigma \text{ Gap } 1 + \text{Gap } 2 \ldots + \text{Gap } 6$$

$$\%Ir = \text{Gap } 7$$

Figure 3 represents step 7, the gaps in (Ir) Individual values compared to current organization and sought organization values chosen in the survey;

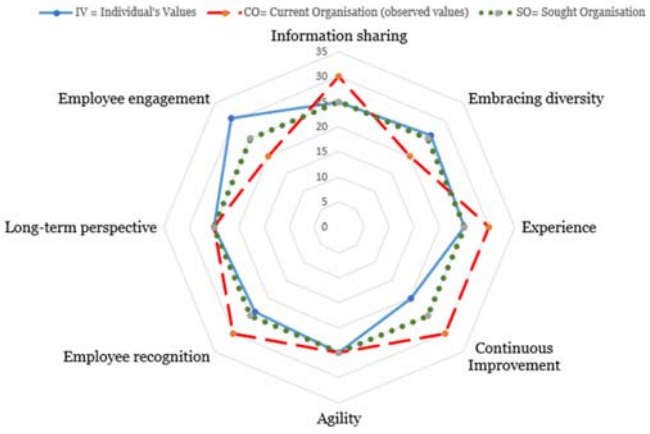

Figure 3. Top 8 sought values in Ir (Individual Readiness) and gaps.

Figure 4 illustrates the gap-map framework with delta between CXO Strategic vision (future target state) and reality (the Or and Ir current state).

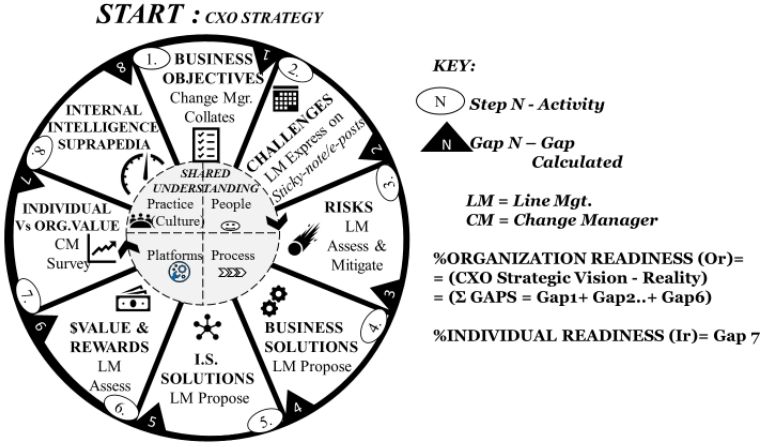

Figure 4. Gap-Map: Framework for Transformation Shared Understanding

While the map assists in public (Or) alignment, the empirical data collected especially during anonymous one-to-one interviews and surveys detailed that we also must address employee individual readiness (Ir) in order to satisfy both basic and growth needs. When we graphically represent these 8 values in a spider diagram (figure3), we can gap-map the individual needs of the organization sought by employees, and measure the delta between current loss of energy (entropy) and plan to address their needs.

In step#8, we achieve common-language with which to effect communal delivery of our business objectives, business value, and employee intrinsic /extrinsic motivation. This is the "Internal Intelligence Suprapedia", and available across departments for communication. The suprapedia is a prioritized action-list, nominated action owner(s) responsible, with due date, and impact of 4P resources required. It is determined by consensus following completion of the first seven Gap-Map steps, and is used to align cross-departmental staff, who in turn engage standard existing toolsets and ontologies to derive essential planning data e.g. risk-management tools, budgets, resources etc. This communal exercise acts as a visualization vent for interdepartmental challenges, exactly the counterbalance CXOs require to address digital privacy scenarios *at that moment* in time. This means the Gap-Map is a continuous improvement exercise during transformation, in order to improve resource gaps.

Gap-Map evaluation in GDPR

Gap-Map was first evaluated during a major CXM IS transformation of Europe and Africa's leading Telecommunications Service Provider. The main servers were installed in the London Headquarters, but due to the global nature of cloud business, proof-of-concept testing began in South Africa. It was immediately apparent there was a major legal challenge involved in CXM data migration across two separate data-privacy jurisdictions. Change-agents worked with groups as diverse as Engineering-Operations (Networks), Customer-Support (Contact-Centre), Legal, Marketing and Executive functions. Through the Gap-Map, we articulated and tracked the privacy potential implications across these diverse groups for action. Figure 5 illustrates a sample output from application of the Gap-Map in development of shared understanding through the 8 steps.

Highlights include Step#1 collation of CIO (sponsor) strategic business objectives, reflecting pressing shareholder and customer concerns. Staff-members later commented that "*by calling these out, we save much interpretive time in the employee chain*". This is because in previous transformations to the Gap-Map, intermediaries such as Line-Managers had relayed their subjective interpretation of CEO strategic requirements from the Annual Report, and conveyed these as Operational Objectives to their immediate staff. However, by workshopping step#2, all impacted stakeholder managers were involved. While many

initially cited their own operational KPIs, gap articulation highlighted action aspects such as political silos, budget deficits, process interface requirements, as well as expected areas such as competence gaps. One interesting anomaly occurred during a Risks #3 step, a GDPR survey. When asked "*has your organization adopted data-destruction policies*" (required by GDPR Article 30, record keeping), 81% responded affirmative. Yet when asked if data destruction existed for laptops, smart-phones, cloud, or third-party suppliers, the response dipped to a mean of 26%. It illustrates the re-framing required by collaborative parties who mentally-mapped data as extant on paper, servers, and Storage Area Networks.

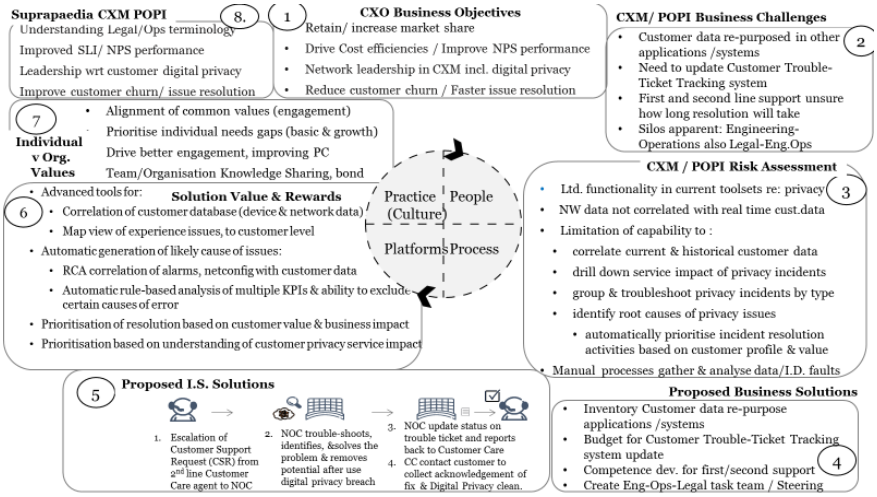

Figure 5. Application of Gap-Map in GDPR/POPI scenario

The step findings were later reviewed with respective departmental staff-members, for any new, unusual or innovative solutions (e.g. to reduce budget or resource constraints). The Gap-Map enhanced the collaboration dynamic between both apposite business organization entities (i.e. Legal, Marketing and Sales), and Technical/Operations entities (Customer Care, Operations and Engineering). The teams also addressed rewards and value potential (step#6), key to GDPR transformation success, through engaging staff for their needs. The framework value in aligning staff in deriving essential GDPR planning data e.g. risk-management, budgets, resources etc. and explicitly measurable in terms of time saved, resources effectively deployed, and in achieving programme targets. Gap-Map acts as a visualization vent for interdepartmental challenges, the counterbalance the CEO requires to address the POPI transformation scenario *at that time, in that organizational setting*. The Gap-Map is of strategic importance to articulation of both Organization and Individual readiness being expressed transparently.

Contribution

The framework has since evolved through application of the Gap-Map in global management of GDPR engagements, and assisted in saving the company over €2m OPEX through faster best-practice establishment. The resultant suprapedia of previously tacit information aligns and narrows focus in effecting suitable GDPR transformation solutions as follows (based on IDC research, 2001):

- Better decisions based on concise or better information with a mutually agreed mandate.
- Reduced duplication of effort as business unit work transparently on projects, not in silos.
- Improved sales because customers find information when they need it.
- Increased productivity because employees can find timely information.
- 'Line-of-sight' : Strategic Vision permeates business, operational and competence objectives.

Gap-Map had considerable impact in training - one GDPR survey demonstrated over 85% of staff were initially unaware of GDPR implications. Following a competence update programme (blended learning Instructor Led Training supplemented by Web-Based E-Learning), later surveys measured over 98% awareness of GDPR transformation needs. While the upfront cost of the awareness-programme was substantial (over USD€120k), the GDPR programme was delivered on-time, under-budget and with a staff-

survey rating the programme effectivity at just over 81%, substantiating Gap-Map value. Gap-Map enabled diverse departments mitigate penalties from four regulatory authorities[4]. Research[5] confirms such a 'cross-collaborative" framework enhances decision-making capability, while building a learning organization, and stimulating cultural change and innovation. Bottom-line estimates suggest Fortune500 companies lose roughly "*$31.5b p.a. failing to share knowledge*" (IDC, 2001). In real terms, Gap-Map has substantial impact to the bottom-line by amortization of OPEX savings through CAPEX investment, gains in EBITDA, shareholder value, and program management cashflow attributes, as well as customer focus.

Conclusion

More research is proposed to understand how entropy, or loss of energy, in Individual Readiness impacts on the Propensity to Change score. This will place emphasis on individual employee cultural values, performance, motivation, engagement, as well as 'negative' values such as fear and key staff retention. It is proposed to later create a 'gap-synthesizer', a realtime gap dashboard (currently a work-in-progress), envisaged as a SaaS (Software as a Service) based application utilizing cloud-tools e.g. behavioral analytics, surveys, e-learning, culture-change measures for realtime inter-collaboration. Gap-Map can test our organizations capability in GDPR compliance e.g. Marketing re-use of data, Operations destroying data etc., and enable diverse multinational corporate virtual-teams create tangible awareness of respective responsibilities. Our organizations then have control to create tenable data privacy policies. The value of demonstrating to our organization how to understand our business objectives and constraints then allow us to address real needs, for example in the case of GDPR, something as amorphous as "*the spirit of the law*". Our organizations may deliver a ubiquitous multifunctional system of scenarios for re-use on a global scale thereby multiplying the effect of the data value e.g. one may tweak Use-Cases previously analyzed for re-use. The GDPR directive became active on May 25th 2018, but future e-privacy changes emphasize the opportunities for continued top-down empowerment, and the art and science, the Gap-Map bottom-up collaboration framework. Joi-Ito concurs [6] : "*CEOs can't know these adjacent opportunities, so empowerment comes with permissionless innovation, not a small group of smart people*".

References

Andonie, R., Russo, J.E., and Dean, R. (2007) 'Crossing the Rubicon: A generic intelligent advisor', *International Journal of Computers, Communications & Control,* 2(1), pp. 5-16.

Bandler, R. & Grinder, J. (1983) *Reframing: Neurolinguistic programming and the transformation of meaning* , USA: Real People Press,U.S.

Boston Consulting Group, and Ito, J. (2017) *MIT Media Lab's Joi Ito on Digital Disruption and Innovation,* Available at: *https://www.youtube.com/watch?v=2H15q_KD-yw* (Accessed: 18th January 2018).

Bradford Ashton, W., and Stacey, G.S. (1995) 'Technical intelligence in business: understanding technology threats and opportunities ', *International Journal of Technology Management,* 10(1), pp. 67-82.

Chandler,N., Hostmann, B., Rayner, N., and Herschel, G. (2011) 'Gartner's Business Analytics Framework', *Gartner Summit Docs,* 11(09), pp. 67-82 [Online]. Available at: *http://www.gartner.com/imagesrv/summits/docs/na/business-intelligence/gartners_business_analytics__219420.pdf* (Accessed: 17th November 2017).

Chomsky, N. (1964), *Current issues in linguistic theory,* The Hague: Mouton

Chomsky, N. (1993), *A minimalist program for linguistic theory,* MIT occasional papers in linguistics no. 1. Cambridge, Massachusetts, MIT Working papers in linguistics.

Department of the Navy (2018) *Infantry training and readiness manual,* Available at: *http://www.marines.mil/Portals/59/Publications/NAVMC%203500.44B.pdf* (Accessed: 1st May 2018).

Davies, J., Duke, A, and Sure, Y. (2004) 'OntoShare – An Framework-based Knowledge Sharing system for Virtual Communities of Practice', *Journal of Universal Computer Science,* 10 (3), pp. 262-283.

Feldman, S., and Sherman, C. / IDC Inc. (2001) *The high cost of not finding information*, U.S.A.: IDC Information and Data.

[4] Data Protection, Telecommunications, Financial, Consumer Ombudsperson

[5] Garvin, D. (2003) *Learning in Action: A Guide to Putting the Learning Organization to Work*, USA: Harvard Business Review Press.

Frost, F.A., and Kumar, M. (2000) "INTSERVQUAL – an internal adaptation of the GAP model in a large service organisation", Journal of Services Marketing, Vol. 14 Issue: 5, pp.358-377.

Genesereth, M.R. and Nilsson, N.J. (1987) *Logical foundation of Artificial Intelligence*, Los Altos: Morgan Kaufmann.

Gibson, C.B., Cohen, S.G.,Hines, P.J., and Weisband, S.P. (2003) *Virtual teams that work*, U.S.A.: Jossey-Bass.

Gilad, B. (2011) *Early warning: Using Competitive Intelligence to anticipate market shifts, control risk, and create powerful strategies*, USA: AMACOM/American Management Association.

Gregor, S. & Jones, D., 2007. The Anatomy of a Design Theory. *Journal of the Association for Information Systems*, 8(5) 2007, pp.312–336.

Grohowski, R., McGoff, C., Vogel, D., Martz, B., and Nunamaker, J. 1990. "Implementing Electronic Meeting Systems

at IBM: Lessons Learned and Success Factors," *MIS Quarterly*, (14:4), pp. 368-383.

Gruber, T. (1993) 'A translation approach to portable Framework specifications', *Knowledge Acquisition,* 5(2), pp. 199-220.

Guarino, N., and Giaretta, P. (1995) 'Ontologies and Knowledge Bases Towards a Terminological Clarification', in Mars, N.J.I. (ed.) *Towards Very Large Knowledge Bases: Knowledge Building & Knowledge Sharing*. Netherlands: Ios Pr Inc., pp. 25-32.

Hevner, A. (2007) 'A three cycle view of Design Science Research', *Scandinavian Journal of Information Systems,* 19(2), pp. 87-92.

Hevner, A., and Chatterjee, S. (2010) *Design Research in Information Systems: Theory and practice: 22 (Integrated series in Information Systems)*, 2010 edn., USA: Springer. Hockett, C. (1958) *A course in modern linguistics*, USA: Collier Macmillan Ltd.

Institute for Competitive Intelligence (2018) *What is Competitive Intelligence?,* Available at: *https://www.institute-for-competitive-intelligence.com/ci-service/ici/main-pages/ci-concepts* (Accessed: 14th February 2018).

Ipe, M. (2003) 'Knowledge sharing in organizations: A conceptual framework', *Human Resource Development Review,* 2 (4), pp. 337-359.

Koestler, A. (1964). *The Act of Creation*, Penguin Books, New York.

March, S.T. & Smith, G.F., (1995) Design and natural science research on information technology A. Baranzini et al., eds. *Decision Support Systems*, 15(4), pp.251–266.

Moteleb, A.A. and Woodman, M. (2007) 'Notions of Knowledge Management Systems: A Gap Analysis', *Electronic Journal of Knowledge,* 5(1), pp. 55-62.

Nunamaker, J.F., Chen, M. & Purdin, T.D.M (1990) Systems Development in Information Systems Research, Journal of Management Information Systems, 7:3, 89-106

Ostrowski, L., Helferta, M. and Gamab, N. (2014) 'Framework engineering step in design science research framework: a technique to gather', *Behaviour & Information Technology,* 33(5), pp. 443–451.

Parasuraman, A; Zeithaml, V.A. and Berry, L.L. (1988) 'Servqual: A multiple-item scale for measuring consumer perceptions', *Journal of Retailing,* 64 (1 (Spring 1988)), pp. 12-23.

Pérez-Bustamante, G. (1999) "Knowledge management in agile innovative organisations", Journal of Knowledge Management, Vol. 3 Issue: 1, pp.6-17.

Sein, M.K., Henfridsson, O., Purao, S., Rossi, M., and Lindgren, R. (2011) 'Action Design Research', *MIS Quarterly,* 35(1), pp. 37-56.

Schein, E.H. (2016) *Organizational Culture and Leadership*, U.S.A.: John Wiley & Sons.

Schlenker, B. R., & Leary, M. R. (1982). Social anxiety and self-presentation: A conceptualization and model. *Psychological Bulletin*, *92*(3), 641–669.

Simard, A. (2017) 'Organizational social context: The foundation of tacit Knowledge Management', in Jaziri-Bouagina, D, and Jamil, G.L. (ed.) *Handbook of research on tacit knowledge management for organizational success.* U.S.A.: I.G.I. Global, pp. 76-88.

Strong, D.M. and Volkoff, O. (2010) 'Understanding organization-Enterprise System fit: A path to theorizing the Information Technology artifact', *MIS Quarterly,* 34(4), pp. 731-756.

Watson, D., & Friend, R. (1969). Measurement of social-evaluative anxiety. *Journal of Consulting and Clinical Psychology*, *33*(4), 448–457

Van Aken, J.E. (2005) 'Management research as a design science: articulating the research products of mode 2 knowledge production in management', *British Journal of Management,* 16(1), pp. 19-36.

Watzlawick, P.,Weakland, J.H., Fisch, R. (1978) *Change: Principles of problem formation and problem resolution*, 3rd edn., USA: W. W. Norton & Company.